V2616A Hardware User's Manual

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www.moxa.com/product

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V2616A Hardware User's Manual

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1

Introduction

This chapter gives a general overview of the V2616A computer's hardware features and specifications.

The following topics are covered in this chapter:

- **Overview**
- **Package Checklist**
- **Product Features**
- **Hardware Specifications**
- **Hardware Block Diagram**

Overview

The V2616A series of embedded computers are based on the Intel Core i5/i7 processor, and feature 2 RS-232/422/485 serial ports, dual Gigabit Ethernet ports, 3 USB 2.0 ports, and dual VGA/DVI-D video output. V2616A computers have essential compliance with EN 50155, making them ideal for railway and other industrial transport applications. V2616A computers come with a CFast socket that provides ample and secure data buffering or additional storage expansion, as well as 2 hot-swappable storage trays that accept 2.5" solid state or hard disk storage drives, and may be arranged in software RAID 1 arrays to give full data redundancy.

Package Checklist

Each model ships with the following items:

- V2616A embedded computer
- 2 storage tray keys
- Power cable (CBL-M12FF5PPJ21-BK-15-IP68)
- Documentation and software CD or DVD
- Quick installation guide (printed)
- Warranty card
- 2 5-pin terminal blocks

NOTE: Please notify your sales representative if any of the above items are missing or damaged.

Product Features

V2616A embedded computers have the following features:

- Compliant with EN 50121-4
- Essential compliance with EN 50155*
- IEC 61373 certified for shock and vibration resistance
- Two hot-swappable SATA storage trays for 2.5” SSDs or HDDs
- 24 to 110 VDC wide range isolated power input
- Easy battery replacement
- Smart Recovery for manual or automatic system recovery
- SynMap for system health monitoring

* Moxa defines “essential compliance” to include those EN 50155 requirements that make products more suitable for rolling stock railway applications.

Hardware Specifications

Computer

CPU:

• Intel® Core™ i5-3610ME dual-core processor (3M Cache, 2.7 GHz) for V2616A-C5 series
• Intel® Core™ i7-3517UE dual-core processor (4M Cache, 1.7 GHz) for V2616A-C7-T series
• Intel® Core™ i7-3612QE quad-core processor (6M Cache, 2.1 GHz) for V2616A-C8 series

OS (pre-installed): Linux or Windows Embedded Standard 7
System Chipset: Mobile Intel HM65 Express Chipset
System Memory: 16 GB capacity, 4 GB pre-installed: 2 slot of 8 GB DDR3-1600 SO-DIMM SDRAM
USB: 3 USB 2.0 compliant hosts; 2 with type A connectors supporting system bootup, 1 with M12 connector

Storage

Built-in: 8 GB CFast to store OS
Storage Expansion: 2 hot-swappable storage trays for 2.5” SATA SSD or HDD
HDD Support: 1 internal SATA-II storage connector for 2.5” SSD or HDD

Expansion Slot:

1 full-size/half-size mini PCIe socket with 1 SIM card socket. Mini PCIe socket supports power on/off control

Other Peripherals

Audio: Line-in, line-out (M12 X-coded)

Display

Graphics Controller: Intel® HD Graphics 4000 (integrated)

VGA Interface: DB15 female connector, max. resolution 2048 x 1536

DVI Interface: DVI-D connector (Chrontel CH7307 SDVO to DVI transmitter), max. resolution 1920 x 1200

Ethernet Interface

LAN: 2 auto-sensing 10/100/1000 Mbps ports (M12 X-coded)

Serial Interface

Serial Standards: 2 software-selectable RS-232/422/485 ports (DB9 male)

Isolation Protection: 1.5 kV

ESD Protection: 4 kV for all signals

Serial Signals

RS-232: TxD, RxD, DTR, DSR, RTS, CTS, DCD, GND

RS-422: TxDA(-), TxDB(+), RxDB(+), RxDA(-), GND

RS-485-4w: TxDA(-), TxDB(+), RxDB(+), RxDA(-), GND

RS-485-2w: DataA(-), DataB(+), GND

Serial Communication Parameters

Data Bits: 5, 6, 7, 8

Stop Bits: 1, 1.5, 2

Parity: None, Even, Odd, Space, Mark

Flow Control: RTS/CTS, XON/XOFF, ADDC® (automatic data direction control) for RS-485

Baudrate: 50 bps to 921.6 Kbps (non-standard baudrates supported; see user's manual for details)

Digital Input

Input Channels: 6, source type

Input Voltage: 0 to 30 VDC at 25 Hz

Digital Input Levels for Dry Contacts:

• Logic level 0: Close to GND

• Logic level 1: Open

Digital Input Levels for Wet Contacts:

• Logic level 0: +3 V max.

• Logic level 1: +10 V to +30 V (Source to DI)

Isolation Protection: 3 kV

Digital Output

Output Channels: 2, sink type

Output Current: Max. 200 mA per channel

On-state Voltage: 24 VDC nominal, open collector to 30 VDC

Connector Type: 10-pin screw terminal block (6 DI points, 2 DO points, DI Source, GND)

Isolation: 3 kV optical isolation

LEDs

System: 1 Power, 1 Storage

LAN: 2 100M/Link, 2 1000M/Link

Serial: 2 TX, 2 RX

Physical Characteristics

Housing: Aluminum

Weight: 5 kg

Dimensions (with mounting ear): 287 x 290 x 101 mm (11.29 x 11.41 x 3.97 in)

Mounting: wall

Environmental Limits

Operating Temperature: (without HDD installed)
Standard models: -25 to 55°C (-13 to 131°F)
Wide temp. models: -40 to 70°C (-40 to 158°F)
Storage Temperature: (with SSD installed) -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)
Anti-vibration: EN 50155 standard
Anti-shock: EN 50155 standard

Power Requirements

Input Voltage: 24 to 110 VDC, M12 connector
Note: 24 and 110 VDC are EN 50155 compliant
Power Requirements:
• 60 W (no SSD/HDD attached)
• 2.5 A @ 24 VDC to 0.55 A @ 110 VDC (no SSD/HDD attached)
Power Button: On/off (rear panel)

Standards and Certifications

Safety: UL 60950-1, CSA C22.2 No. 60950-1-07, EN 60950-1
EMC: EN 55022 Class A, EN 61000-3-2 Class D, EN 61000-3-3, EN 55024, FCC Part 15 Subpart B Class A
Rail Traffic: EN 50155 (essential compliance*), EN 50121-3-2, EN 50121-4, IEC 61373
Green Product: RoHS, CRoHS, WEEE
*Please contact Moxa or a Moxa distributor for details.

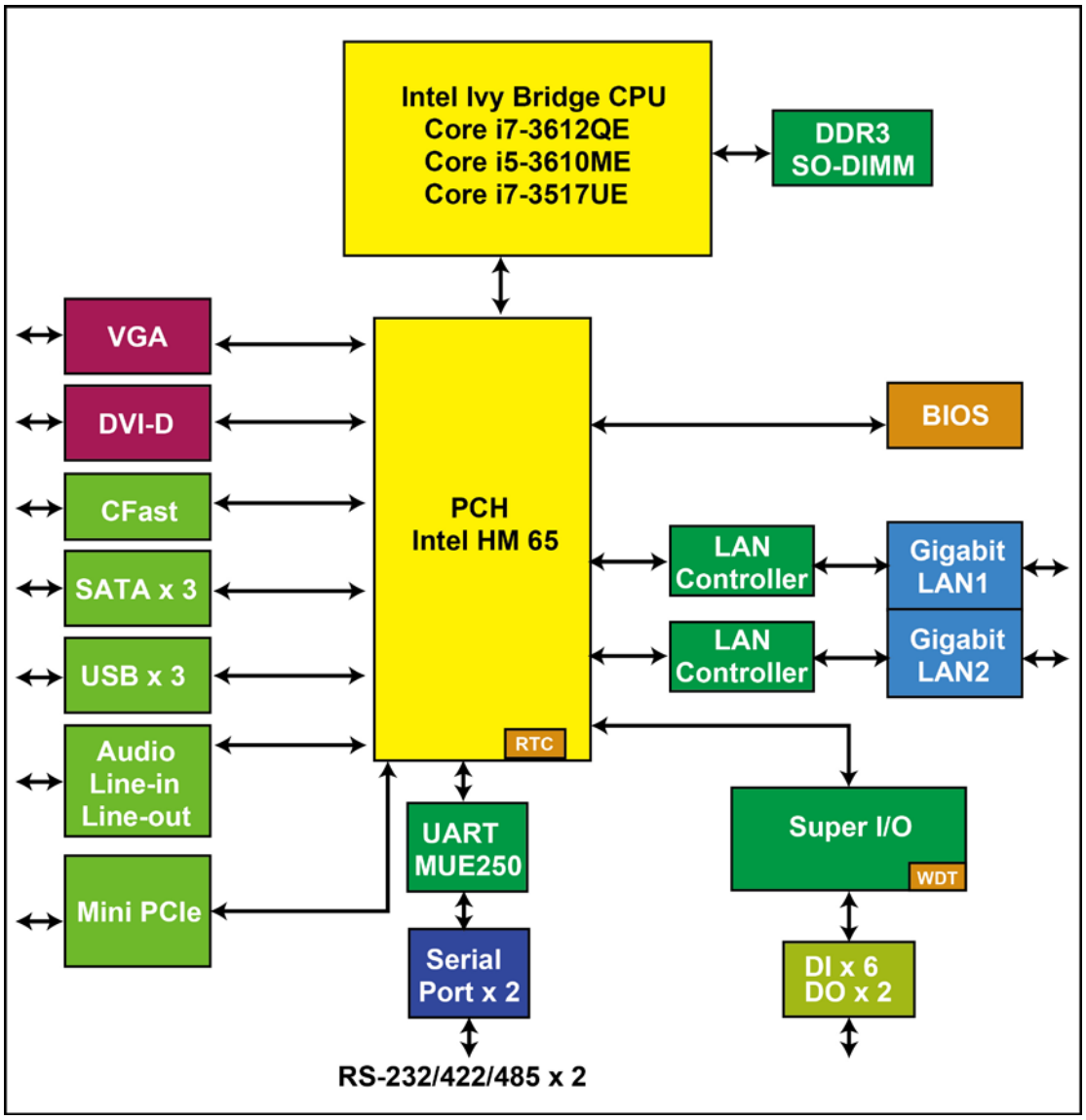
Reliability

Automatic Reboot Trigger: Built-in WDT (watchdog timer) supporting 1-255 second system reset, software programmable

Warranty

Warranty Period: 3 years
Details: See www.moxa.com/warranty
Note: These hardware specifications describe the embedded computer unit itself, but not its official accessories. In particular, the wide temperature specification does not apply to accessories such as power adapters and cables.

Hardware Block Diagram



2

Hardware Introduction

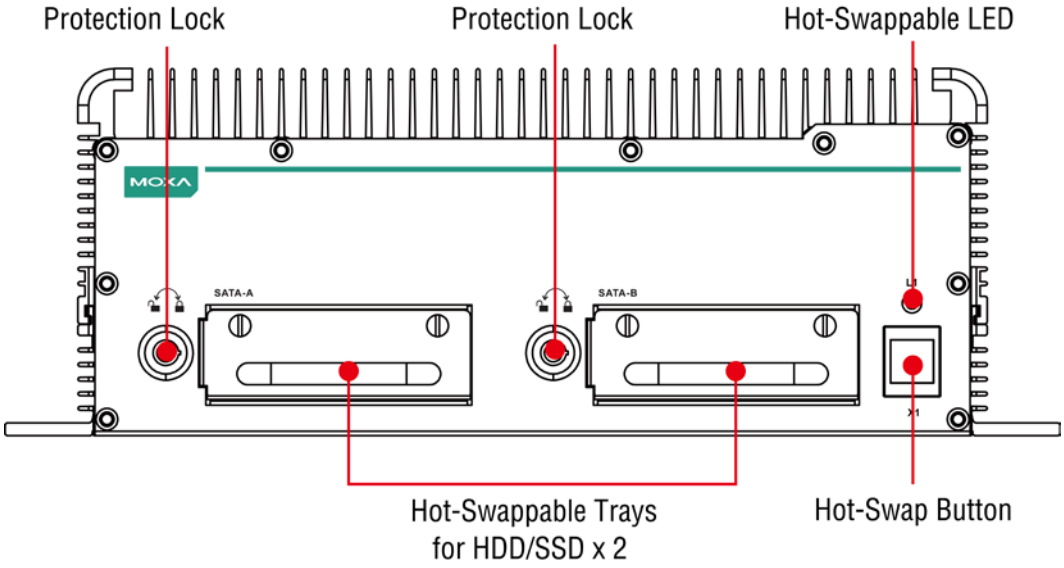
V2616A embedded computers are compact and built rugged for use in industrial applications. LED indicators help you monitor performance and identify trouble spots, multiple serial ports allow you to connect a variety of devices for wireless operation, and the reliable and stable hardware platform lets you devote your attention to developing your applications, rather than diddling with low-level APIs and device drivers.

The following topics are covered in this chapter:

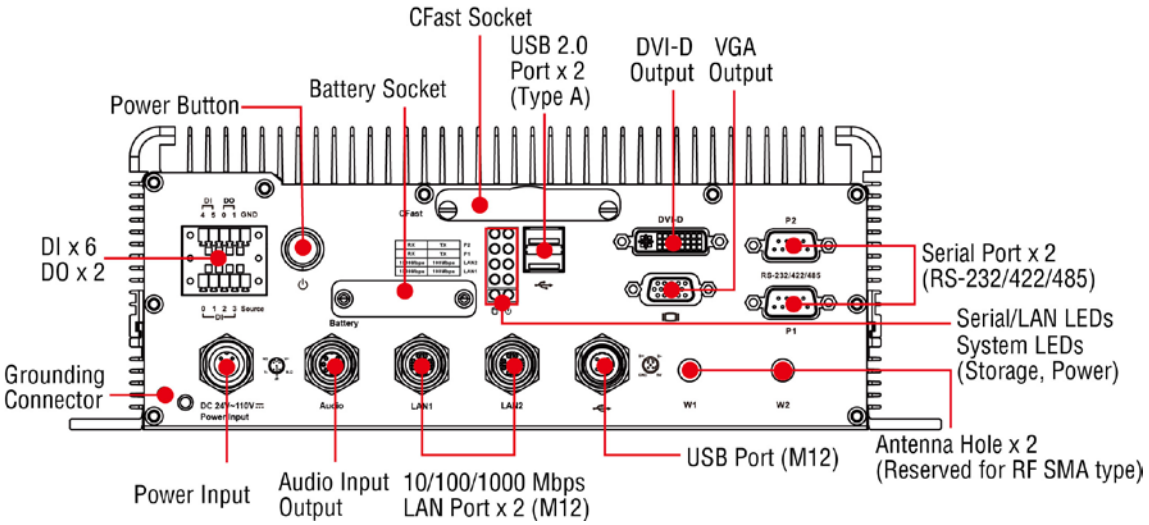
- **Appearance**
- **Dimensions**
- **LED Indicators**
- **Real Time Clock**

Appearance

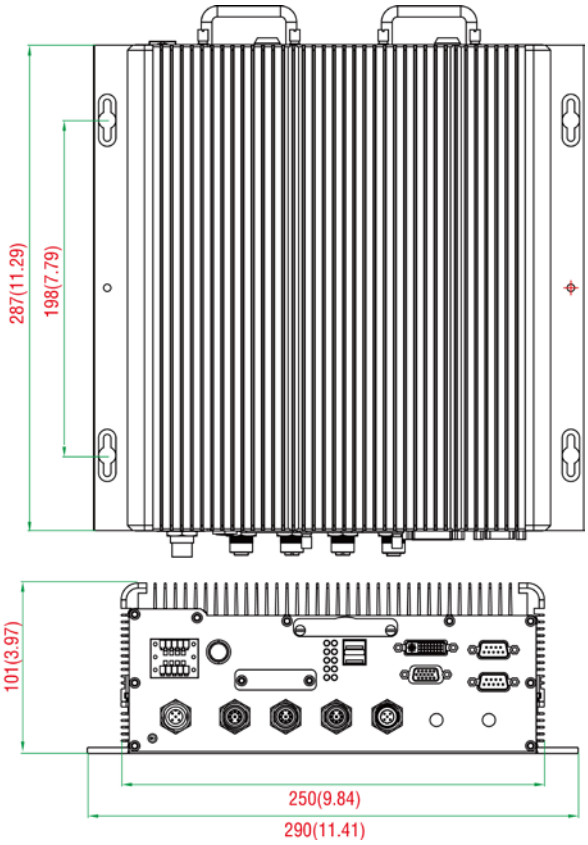
Front View



Rear View



Dimensions



LED Indicators

LED Name	LED Color	LED Function
Power	Green	Power is on and functioning normally
	Off	Power is off, or has failed
Storage	Yellow	CFast card/HDD/SSD is transmitting data.
	Off	CFast card/HDD/SSD is not transmitting data.
LAN (1, 2)	Green	100 Mbps Ethernet mode
	Yellow	1000 Mbps Ethernet mode
	Off	10 Mbps or no activity
Tx (P1-P2)	Green	Serial ports P1-P2 transmitting data
	Off	Serial ports P1-P2 not transmitting data
Rx (P1-P2)	Yellow	Serial ports P1-P2 receiving data
	Off	Serial ports P1-P2 not receiving data
L1	Red	Programmable. By default, two disks ready to be removed.
	Blinking	Programmable. By default, disks inserted into incorrect storage tray.
	Off	Programmable. By default, two disks inserted into correct storage trays.

Real Time Clock

The embedded computer's real-time clock is powered by a lithium battery. We strongly recommend that you **NOT** replace the lithium battery on your own. If the battery needs to be changed, contact the Moxa RMA service team.

ATTENTION

There is a risk of explosion if the wrong type of battery is used. To avoid this potential danger, always be sure to use the correct type of battery. Contact the Moxa RMA service team if you need to replace your battery.

Caution

Dispose of used batteries in a suitable manner. Consult the manufacturer of your battery for more details.

3

Hardware Connection Description

In this chapter, we show how to connect the embedded computers to the network and to a variety of common devices.

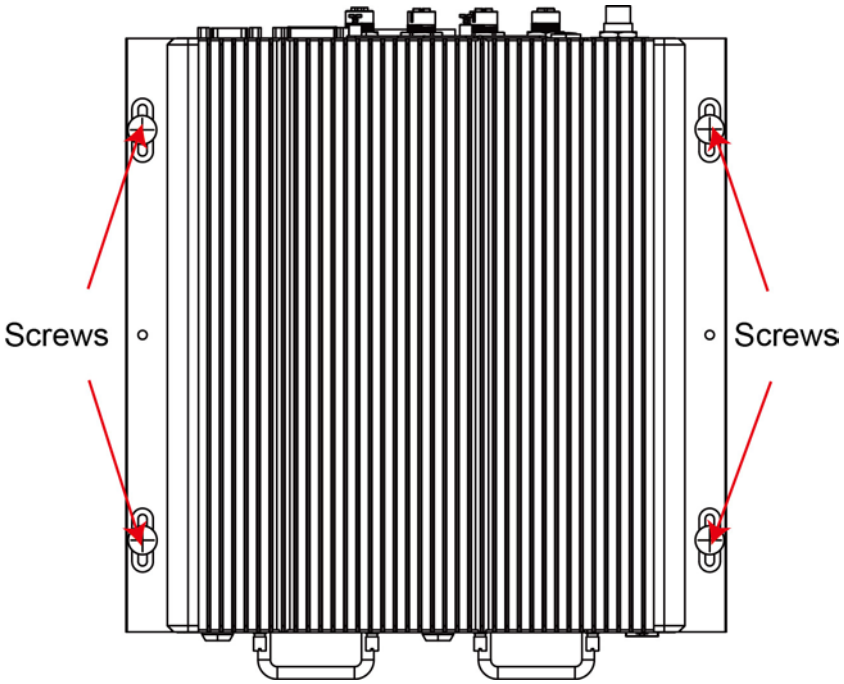
The following topics are covered in this chapter:

- **Installing the V2616A**
- **Wiring Requirements**
  - Connecting the Power
  - Grounding the Unit
- **Connecting Data Transmission Cables**
  - Connecting to the Network
  - Connecting to a Serial Device
- **Installing a CFast Card**
- **Connecting an Audio Input**
- **Digital Input/Output**
- **Connecting to a VGA Monitor**
- **Connecting to a DVI-D Monitor**
- **Connecting to USB Ports**
- **Installing an Internal Storage Device**
- **Making a Storage Drive Hot-Swappable**
- **Upgrading the Memory Module**
- **Installing the Mini PCIe Module**

Installing the V2616A

Wall or Cabinet Mounting

The V2616A comes with two wall-mounting brackets. Use two screws per side to attach the V2616A to a wall or cabinet.



Wiring Requirements

This section describes how to connect peripheral devices to the embedded computer.

You should read and follow these common safety precautions before proceeding with the installation of any electronic device:

- Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.

ATTENTION

Do not run signal or communication wiring together with power wiring in the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.

- Use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring that shares similar electrical characteristics can be bundled together.
- Keep input wiring and output wiring separate.
- It is advisable to label the wiring to all devices in the system.

ATTENTION

Safety First!

Be sure to disconnect the power cord before installing and/or wiring your V2616A.

Wiring Caution!

Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size.

If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

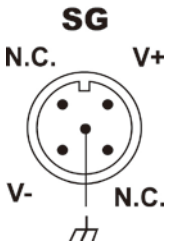
Temperature Caution!

Be careful when handling the unit. When the unit is plugged in, the internal components generate heat, and consequently the outer casing may feel hot to the touch.

Connecting the Power

Connect the 24 to 110 VDC power line with M12 connector to the V2616A computer. If the power is supplied properly, the **Ready** LED will glow a solid green after a 25 to 30 second delay.

Grounding the Unit



SG: The **Shielded Ground** (sometimes called **Protected Ground**) contact is the central pin of the power input connector. Connect the SG wire to an appropriately grounded metal surface.

Connecting Data Transmission Cables

This section describes how to connect V2616A embedded computers to a network and serial devices.

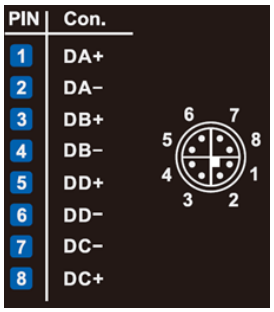
Connecting to the Network

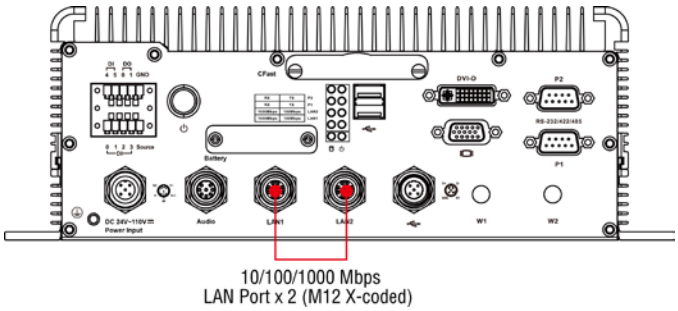
Plug your network cable into the computer's Ethernet port. The other end of the cable should be plugged into your Ethernet network. When the cable is properly connected, the LEDs on the embedded computer's Ethernet port will glow to indicate a valid connection.

Two 10/100/1000 Mbps Ethernet ports using M12 X-coded connectors are located on the rear panel. See the figures below for the location of the Ethernet ports and the pin assignments.

ATTENTION

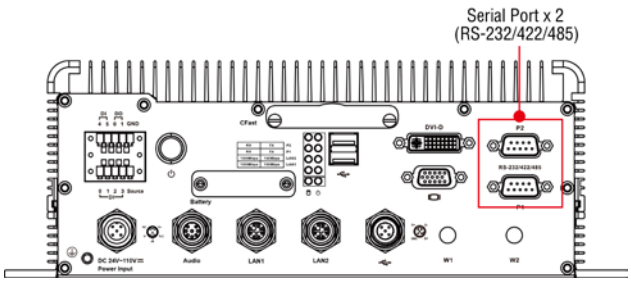
This is the pin assignment for the computer-side ports on the V2616A shell. When wiring the switch side of a third-party Ethernet cable, you will need to mirror the pin assignment.



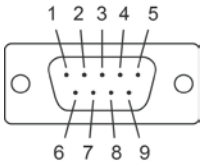


Connecting to a Serial Device

Use a serial cable to plug your serial device into the embedded computer's serial port. Serial ports P1 to P2 have male DB9 connectors and can be configured for RS-232, RS-422, or RS-485 using software. The pin assignments are shown in the table at the top of the next page.



DB9 Male Port **RS-232/422/485 Pinouts**



Pin	RS-232	RS-422	RS-485-4W	RS-485-2W
1	DCD	TxDA(-)	TxDA(-)	–
2	RxD	TxDB(+)	TxDB(+)	–
3	TxD	RxDB(+)	RxDB(+)	DataB(+)
4	DTR	RxDA(-)	RxDA(-)	DataA(-)
5	GND	GND	GND	GND
6	DSR	–	–	–
7	RTS	–	–	–
8	CTS	–	–	–

NOTE This is the pin assignment for the computer-side connectors on the V2616A shell. If you are wiring peripheral-side connectors for a serial cable, you will need to **mirror** the pin assignment.

Installing a CFast Card

The V2616A embedded computers come with a CFast card socket. To install a card, follow these instructions:

1. Disconnect the V2616A from its power source.
2. The CFast socket is located on the center of the rear panel. Unscrew the CFast socket cover.

3. Insert the CFast card into the socket. Make sure you insert it in the correct direction. When finished, fasten the socket cover with screws.

4. If you need to remove the CFast card, simply push the card inward to activate the spring-locking mechanism, and gently remove it once it pops out.

ATTENTION

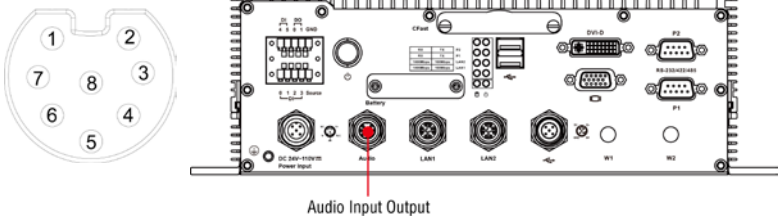
The V2616A embedded computer does not support the CFast hot swap and PnP (Plug and Play) functions. Please remember you **must** cut power first, before inserting or removing the CFast card.

In addition, please note that the operating system of the V2616A (Linux or Windows Embedded Standard 7) is stored on the CFast card, so if you change out the card you will need to re-install the operating system. For details on how to automate this, refer to the **System Recovery** section of the V2616A software manual.

Connecting an Audio Input

The V2616A comes with an M12 X-coded audio input/output connector, allowing users to connect a speaker or an earphone.

Pin	Audio
1	Line-in, right
2	GND
3	Line in plug-in detected
4	Line-in, left
5	Line-out, left
6	Line out, plug-in detected
7	Line-out, right
8	GND

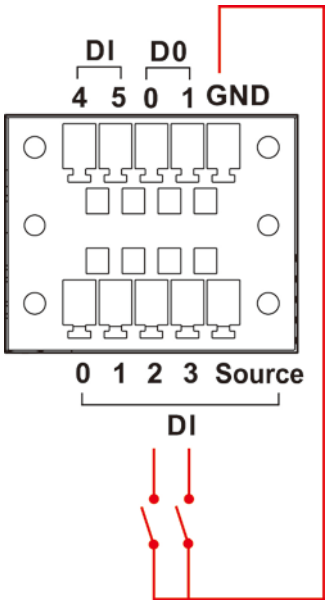


NOTE This is the pin assignment for the computer-side connectors on the V2616A shell. If you are wiring peripheral-side connectors for an audio cable, you will need to **mirror** the pin assignment.

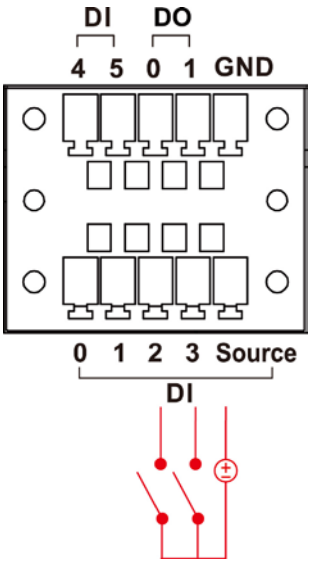
Digital Input/Output

The V2616A comes with a 6-ch digital input and a 2-ch digital output through a terminal block connector. The pin assignments and the wiring methods are shown below.

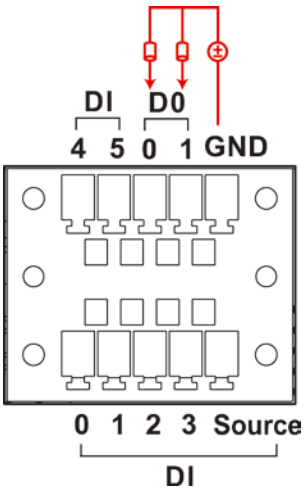
DI Wiring: Dry Contact



DI Wiring: Wet Contact



DO Wiring: Dry Contact

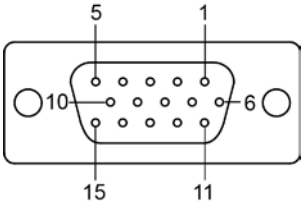


NOTE If you are using wet contacts, you must connect **source** to power. In addition, both DI and DO can only be wired as **sink** type**s**

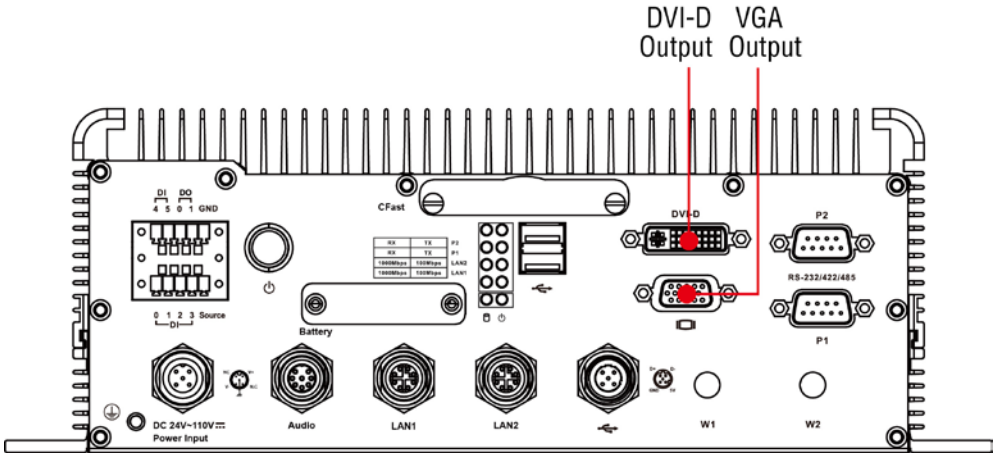
Connecting to a VGA Monitor

The V2616A comes with a D-Sub 15-pin female connector on the front panel to connect a VGA monitor. To ensure that the monitor image remains clear, be sure to tighten the monitor cable after connecting it to the V2616A. The location and the pin assignments of the video outputs are shown in the diagram below.

DB15 Female Connector



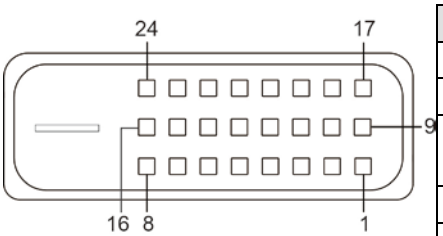
Pin No.	Signal Definition		Pin No.	Signal Definition
1	Red		9	VCC
2	Green		10	GND
3	Blue		11	NC
4	NC		12	DDC2B Data
5	GND		13	HSYNC
6	GND		14	VSYNC
7	GND		15	DDC2B Clock
8	GND			



Connecting to a DVI-D Monitor

The V2616A computer also comes with a DVI-D output for DVI video. Use the cable to connect the DVI-D output to the monitor; if you must rewire a cable, refer to the following table for pin assignments.

DVI-D Connector

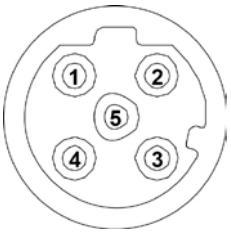


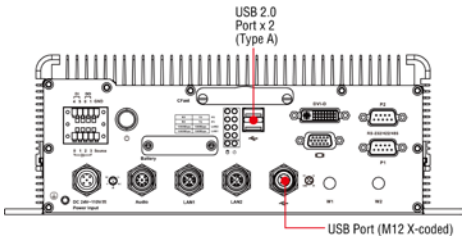
Pin	Signal Definition	Pin	Signal Definition
1	T.M.D.S. Data2-	13	N/C
2	T.M.D.S. Data2+	14	+5V Power
3	T.M.D.S. Data2 Shield	15	Ground (return for +5V, HSync, and VSync)
4	N/C	16	Hot Plug Detect
5	N/C	17	T.M.D.S. Data0-
6	DDC Clock	18	T.M.D.S. Data0+
7	DDC Data	19	T.M.D.S. Data0 Shield
8	N/C	20	N/C
9	T.M.D.S. Data1-	21	N/C
10	T.M.D.S. Data1+	22	T.M.D.S. Clock Shield
11	T.M.D.S. Data1 Shield	23	T.M.D.S. Clock+
12	N/C	24	T.M.D.S. Clock-

Connecting to the USB Ports

On its rear panel the V2616A has an X-coded M12 USB 2.0 port, as well as 2 type A USB 2.0 ports. The hosts can be used for an external flash disk or hard drive for storing large amounts of data. You can also use these USB hosts to connect to a keyboard or a mouse. See the following figures for the locations of the USB ports and the M12 X-coded connector pin assignment.

Pin	USB
1	D+
2	D-
3	+5V
4	GND
5	N.C.



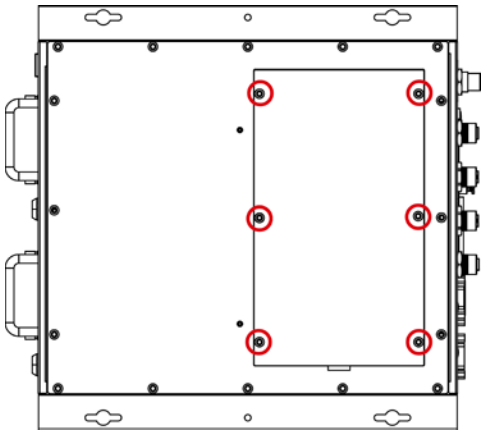


NOTE This is the pin assignment for the computer-side USB ports on the V2616A shell. If you are wiring peripheral-side connectors for a USB cable, you will need to **mirror** the pin assignment.

Installing an Internal Storage Device

The V2616A computer comes with an internal storage tray that allows users to install a 2.5-inch SATA storage device, such as a hard disk or a SSD drive. Take the following steps to install your storage device.

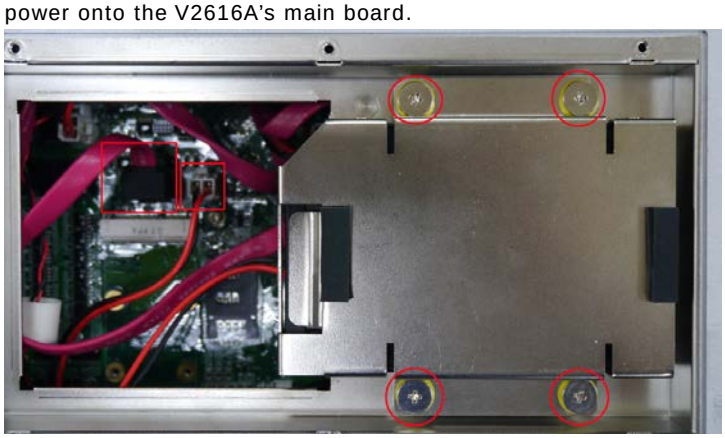
1. Remove the 6 screws from the V2616A's rear panel.



2. Install the hard disk onto the internal storage kit. Connect the cable and connector.

3. Fasten the two screws on each side of the hard disk (total of four).

4. Install the storage kit into the V2616A computer. Fasten four screws on the kit, and connect the cable the power onto the V2616A's main board.

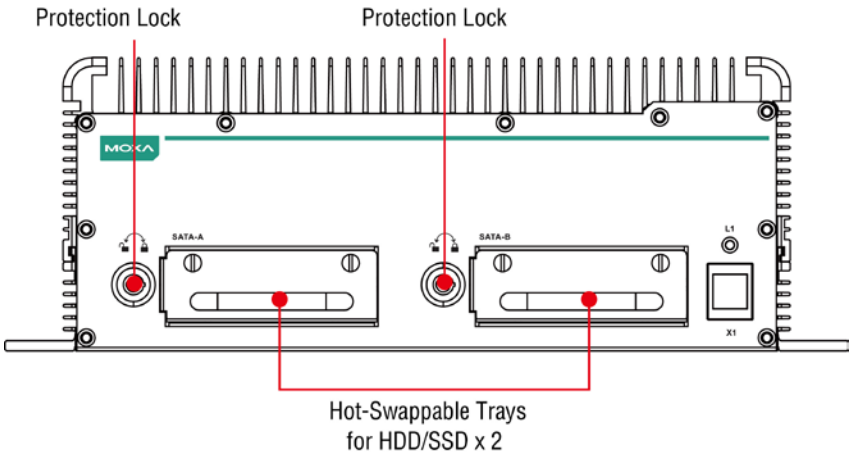


5. Replace the cover onto the back of the computer.

Making a Storage Drive Hot-Swappable

V2616A computers come with 2 faceplates over the storage drive trays; users may attach storage drives to the faceplates to install additional storage media, such as hard disks (HDD) or solid-state drives (SSD). The following section gives instructions for installing the storage devices into the hot-swap trays.

1. The two faceplates on the front panel of the V2616A may be locked, for extra storage security.



2. Rotate the key counterclockwise to unlock the protection lock.

3. Pull out the faceplate by unscrewing the thumbscrews in the upper corners, and then remove the plate. Fasten the storage drive to the faceplate flange as shown below, using the two flathead screws that were shipped with your V2616A.

ATTENTION

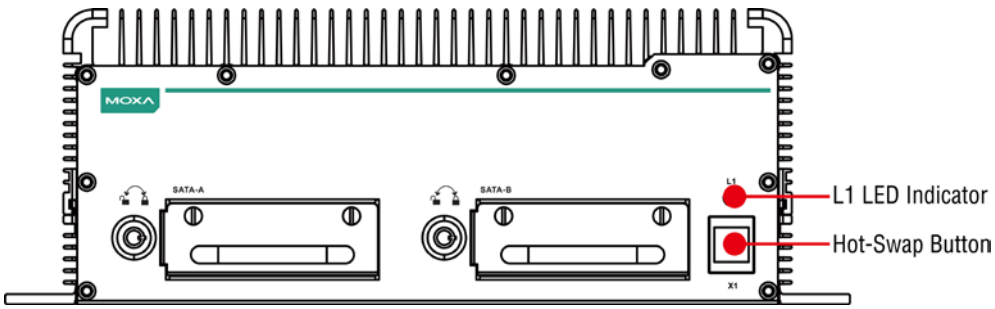
To successfully fit the disk into the slot, use the flathead screws to fasten the hard disk to the tray. ***Do not*** use the roundhead screws, since they may prevent you from being able to insert the tray into the slot.

4. Carefully align the drive with the drive slot, and gently insert the drive into the computer, taking care that it slides smoothly and firmly into the SATA mounts.

5. When finished, turn the key clockwise to activate the lock and tighten the thumbscrews. Use the same method to install a hard disk in second storage tray.

As these are hot-swappable storage trays, you can replace the storage disks while the computer is still powered on. Follow these steps:

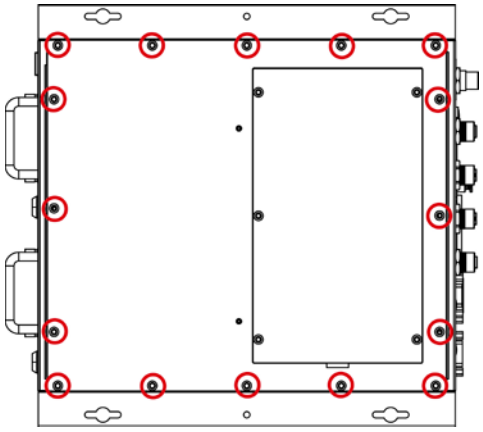
1. Push the hot-swap button, located on the lower right of the front panel.
2. Observe the L1 LED indicator (marked in the diagram below). When the LED starts blinking, the system will start to unmount the storage disk.
3. When the LED stops blinking, you may remove the storage drive.



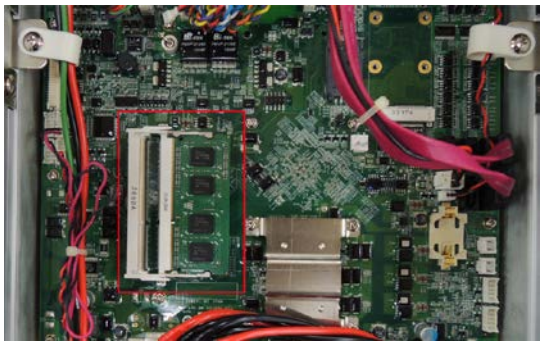
Upgrading the Memory Module

V2616A embedded computers come with two 200-pin, DDR3-1600 SODIMM memory slots that can provide up to 16 GB of memory. One 4 GB memory module is installed at the factory. To upgrade a memory module, follow these instructions:

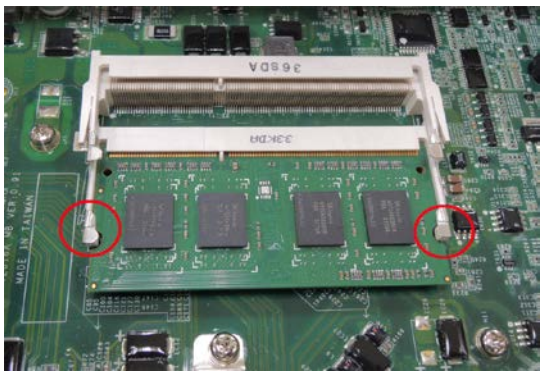
1. Disconnect the V2616A from the power source.
2. Remove the 21 screws that secure the back panel to the case. See the following figure for details.



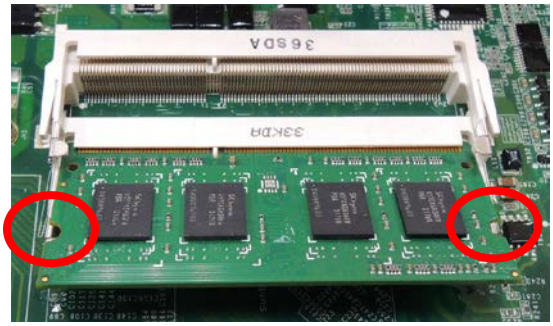
3. Pull up the back cover of the computer; you will now see the memory sockets on the main board.



4. Carefully remove the module by pushing the latches on both sides of the module, freeing it to be removed.



5. After removing the memory card, install the new module by gently but firmly inserting it into the RAM slot. Before securing the card in place, be sure you have aligned the indentations on each side of the card with the mechanical locks that will hold it in place (shown at right, in the red circles).
   Once the card is properly aligned, gently push the card down, until it locks in place. You should hear an audible click; before continuing, make sure the latches are firmly in place.

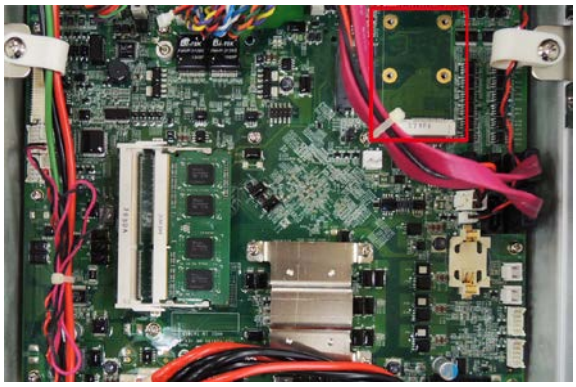


6. When finished, replace the back cover of the V2616A computer.

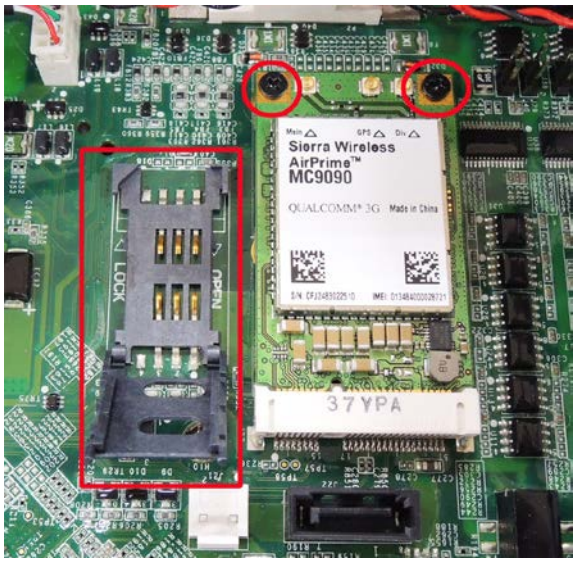
Installing the Mini PCIe Module

The V2616A computer comes with a mini PCIe socket, allowing users to install a mini PCIe module like those used for cellular communications. Follow these steps to installation a module.

1. Pull up the back cover of the computer; you will be able to see the mini PCIe socket on the main board.



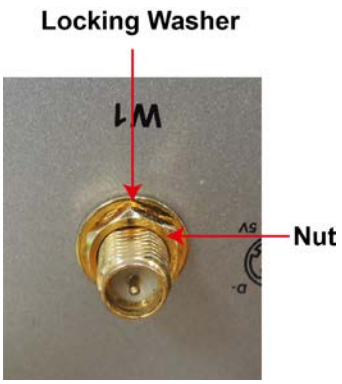
2. Install the module into the socket. Fasten two screws on one end of the module. In addition, pull up the SIM card holder beside the socket.



3. Insert the SIM card in the holder by first dropping the holder into place (flush with the board), and then locking it down by sliding it into place.

4. Connect the cellular antenna cable to the module.

5. Pass the connector of the antenna cable through the antenna hole on the rear panel of the computer. You may use either the W1 or W2 hole. Pass the locking washer over the outer end of the connector first, and then fasten the nut to lock the connector against the face of the computer.



NOTE The cellular module, cable, connector, and antenna are not included in the product package, and must be purchased separately.

4

BIOS Setup

This chapter describes the BIOS settings of the V2616A computer. The BIOS is a set of input/output control routines for peripherals. The BIOS is used to initialize basic peripherals and helps boot the operating system before the operating system is loaded. The BIOS setup allows the user to modify the system configurations of these basic input/output peripherals. All of the configurations will be stored in the battery backed up CMOS RAM, which retains the system information after system reboots or the power is removed.

The following topics are covered in this chapter:

- **Entering the BIOS Setup**
- **Main Information**
- **Advanced Settings**
  - Boot Configuration
  - HDC Configuration
  - Video Configuration
  - Chipset Configuration
  - PCI Express Configuration
  - Hardware Monitor
  - Smart Recovery Info
- **Security Settings**
  - Set Supervisor Password
- **Power Settings**
  - Turbo Mode
  - Auto Wake on S5
  - Wake on LAN
- **Boot Settings**
  - Boot Type
  - PXE Boot to LAN
  - Add Boot Options
  - USB Boot
  - EFI Device First
  - Boot Delay Time
  - Legacy
- **Exit Settings**
  - Exit Saving Changes
  - Save Change Without Exit
  - Exit Discarding Changes
  - Load Optimal Defaults
  - Load Custom Defaults
  - Save Custom Defaults
  - Discard Changes
- **Upgrading the BIOS**

Entering the BIOS Setup

To enter the BIOS setup utility, press the **F2** key while the system is booting up. The main **BIOS Setup** screen will appear. Four options will be available.
Continue: Continue to boot up

Boot Manager: Select the device for booting up

Boot From File: Select the UEFI boot up file

SCU: Enter the BIOS configuration step.

Select **SCU** to enter the **BIOS configuration**.

When you enter SCU, a basic description of each function key is listed at the bottom of the screen. Refer to these descriptions to learn how to use them.

F1: General Help

F5/F6: Change Values

F9: Setup Defaults

F10: Save and Exit

↑ ↓: Select Item

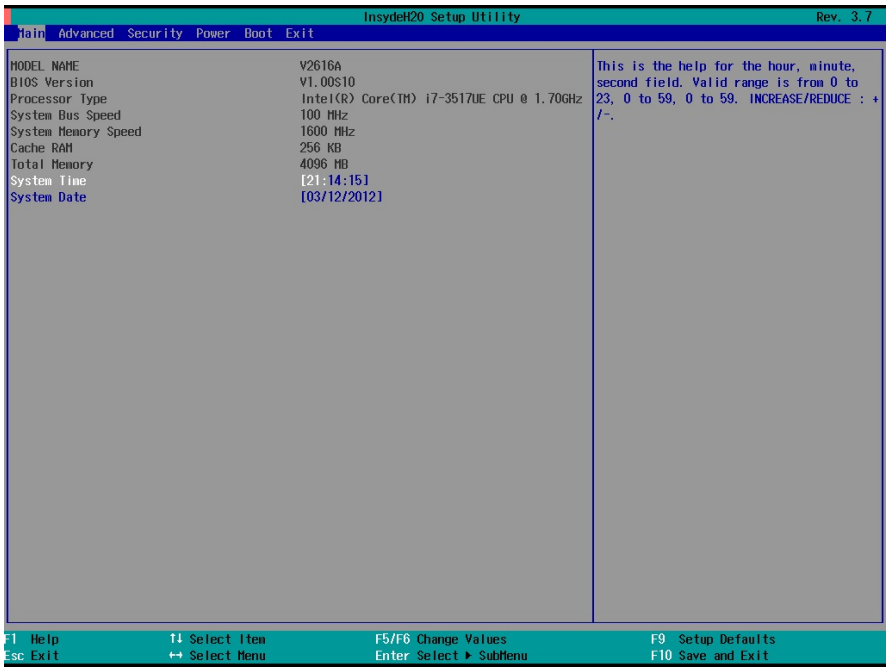
← →: Select Menu

ESC: Exit

ENTER: Select or go to Submenu.

Main Information

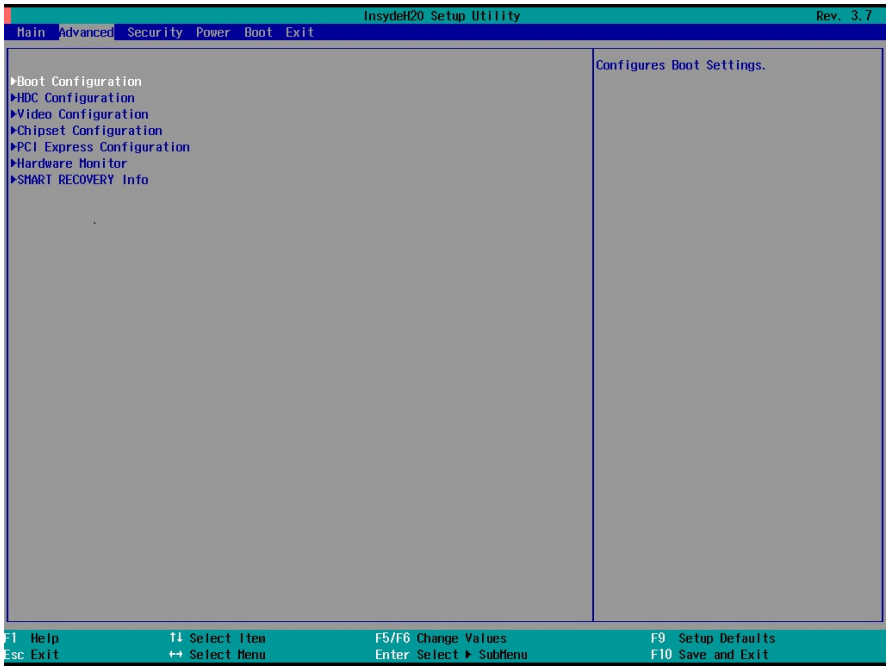
The main page indicates the system information, such as model name, BIOS version, and CPU type. Users may view the basic system hardware information in the page.


InsydeH20 Setup Utility
Rev. 3.7
Main Advanced Security Power Boot Exit
MODEL NAME V2616A
BIOS Version V1.00S10
Processor Type Intel(R) Core(TM) i7-3517UE CPU @ 1.70GHz
System Bus Speed 100 MHz
System Memory Speed 1600 MHz
Cache RAM 256 KB
Total Memory 4096 MB
System Time [21:14:15]
System Date [03/12/2012]
This is the help for the hour, minute, second field. Valid range is from 0 to 23, 0 to 59, 0 to 59. INCREASE/REDUCE : + /-.
F1 Help ↑↓ Select Item F5/F6 Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ SubMenu F10 Save and Exit

Note: the information for Processor Type will vary depending on the different models that you purchase.

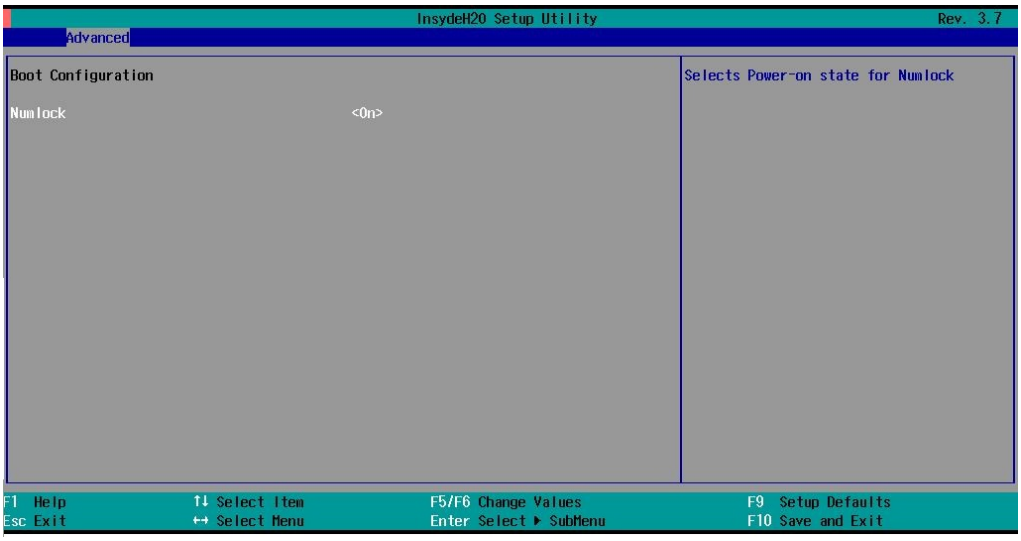
Advanced Settings

The “Advanced Features” screen will appear when choosing the “Advanced” item from the main menu.


InsydeH20 Setup Utility
Rev. 3.7
Main Advanced Security Power Boot Exit
▸Boot Configuration
▸HDC Configuration
▸Video Configuration
▸Chipset Configuration
▸PCI Express Configuration
▸Hardware Monitor
▸SMART RECOVERY Info
Configures Boot Settings.
F1 Help ↑↓ Select Item F5/F6 Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ SubMenu F10 Save and Exit

Boot Configuration

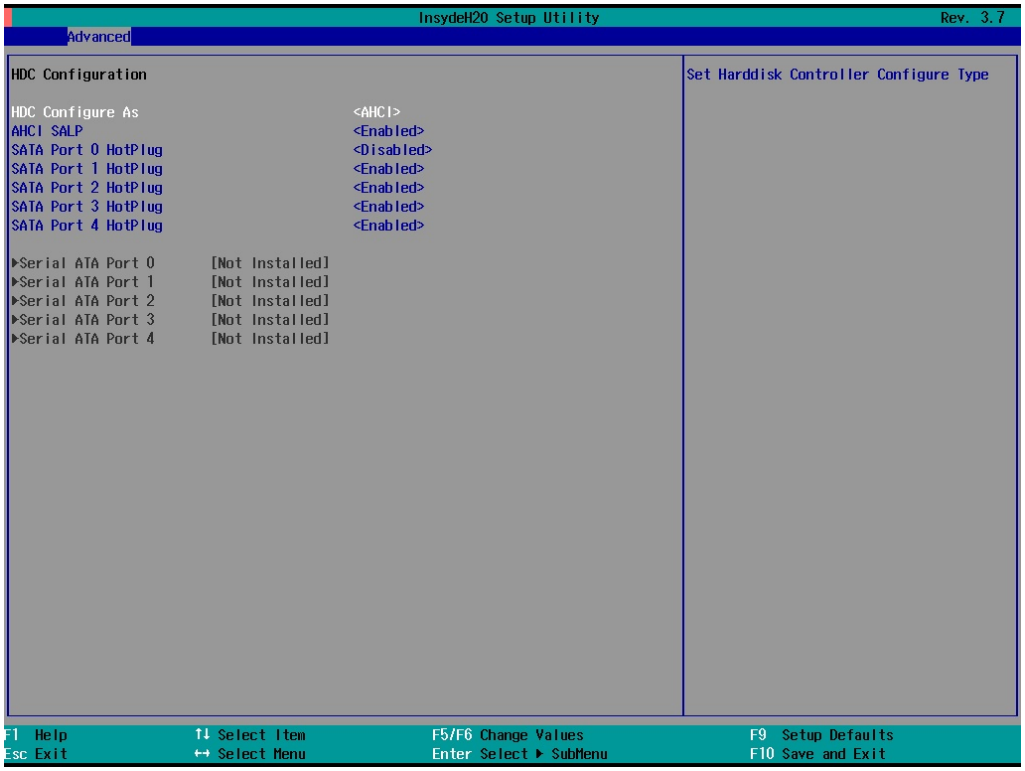
This item allows users to configure the default value of Numlock.



Option: On (default), Off.

HDC Configuration

The host drive controller may be configured for IDE or AHCI mode (default).
When the AHCI mode is selected, the following screen will appear.



Serial ATA Port 0 to 4

This setting allows the user to display information about the installed drives.

AHCI SALP

Note that AHCI SALP will only appear when AHCI mode is selected. This item allows you to enable aggressive **link power management** (SALP) in AHCI. SALP enables the host bus adapter to conserve power by directly detecting when a SATA drive is no longer processing information and then immediately shifting it into suspended or sleep modes without waiting for software processes to initiate power-down processes. Host Capability Register bit 26.

Options: Enabled (default), Disabled

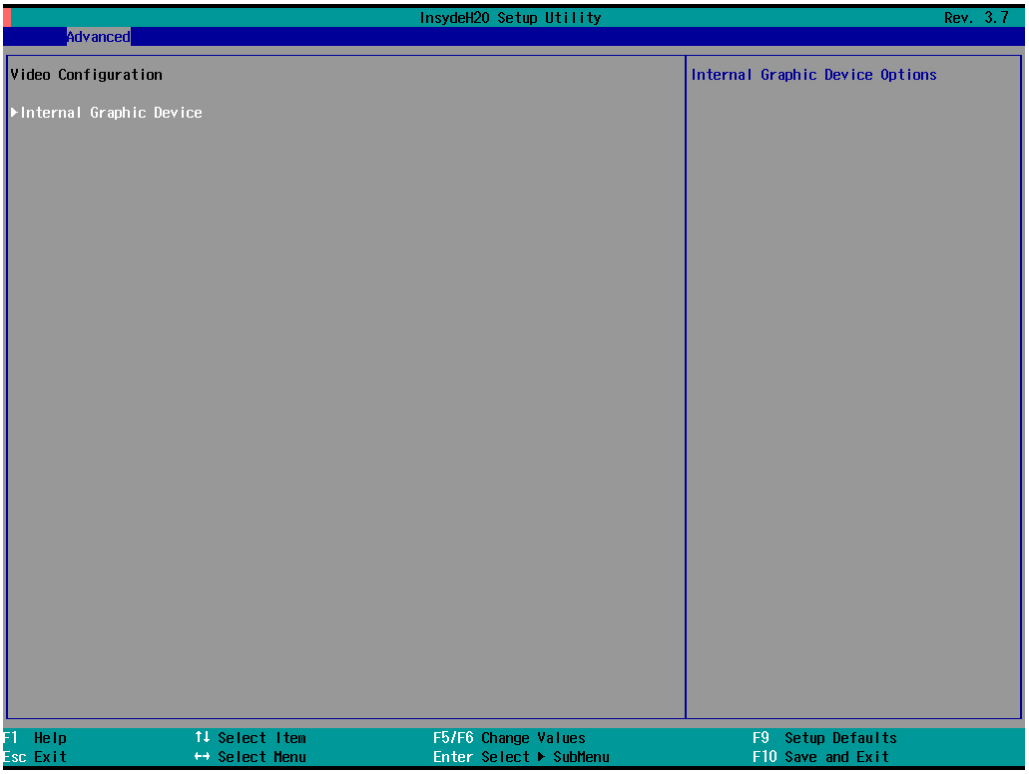
SATA Port 0 to 4 - HotPlug

This item allows you to enable/disable hotplug capabilities (the ability to remove the drive while the computer is running) for installed storage drives.

Options: Disabled (default for Port 0), Enabled (default for Port 1 to Port 4)

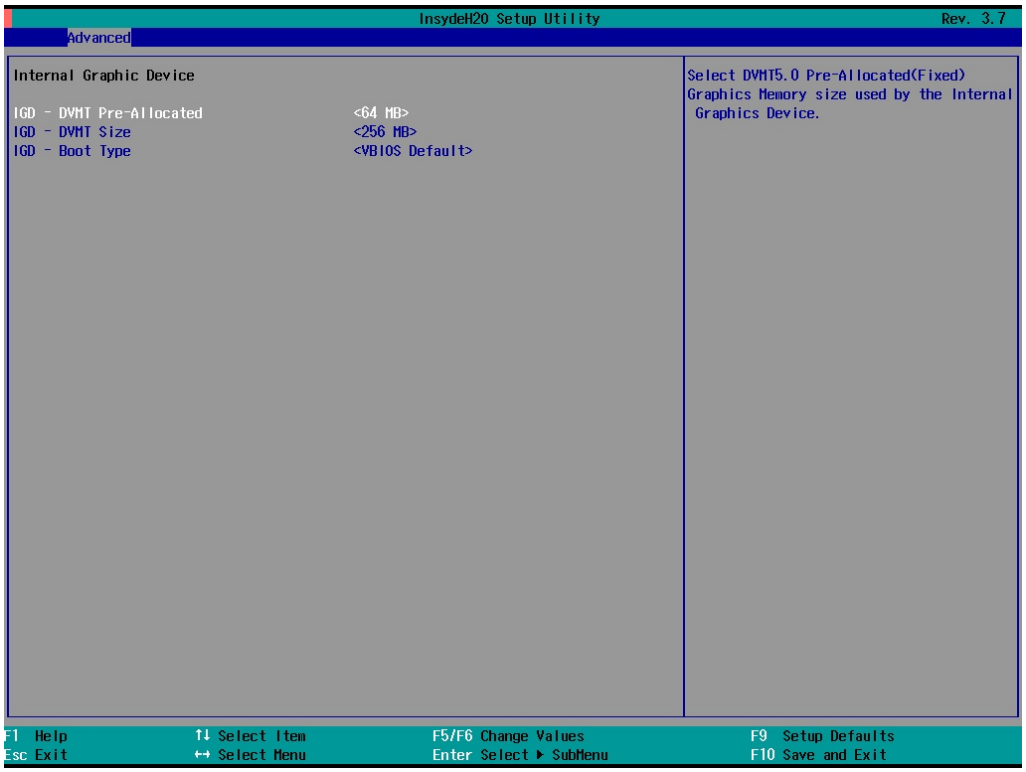
Video Configuration

This item allows you to configure the integrated graphics device (IGD) for things like memory allocation (**DVMT**)



Internal Graphics Device

This option allows you to enable/disable the internal graphics device.



IGD—DVMT Pre-Allocated

This item allows you to configure pre-allocated memory capacity for the IGD. Pre-allocated graphics memory is invisible to the operating system.

Options: 64 MB (default), 32 MB, 96 MB, 128 MB, 256 MB, 512 MB

DVMT is a BIOS solution where “the optimum amount of memory is dynamically allocated and de-allocated as needed for balanced graphics and system performance, through Intel® Direct AGP and a highly efficient memory utilization scheme. DVMT ensures the most efficient use of available system memory resources for maximum 2D/3D graphics performance.

IGD—DVMT Size

This item allows you to configure the maximum amount of memory DVMT will use when allocating additional memory for the internal graphics device.

Options: 256 MB (default), 128 MB, Max

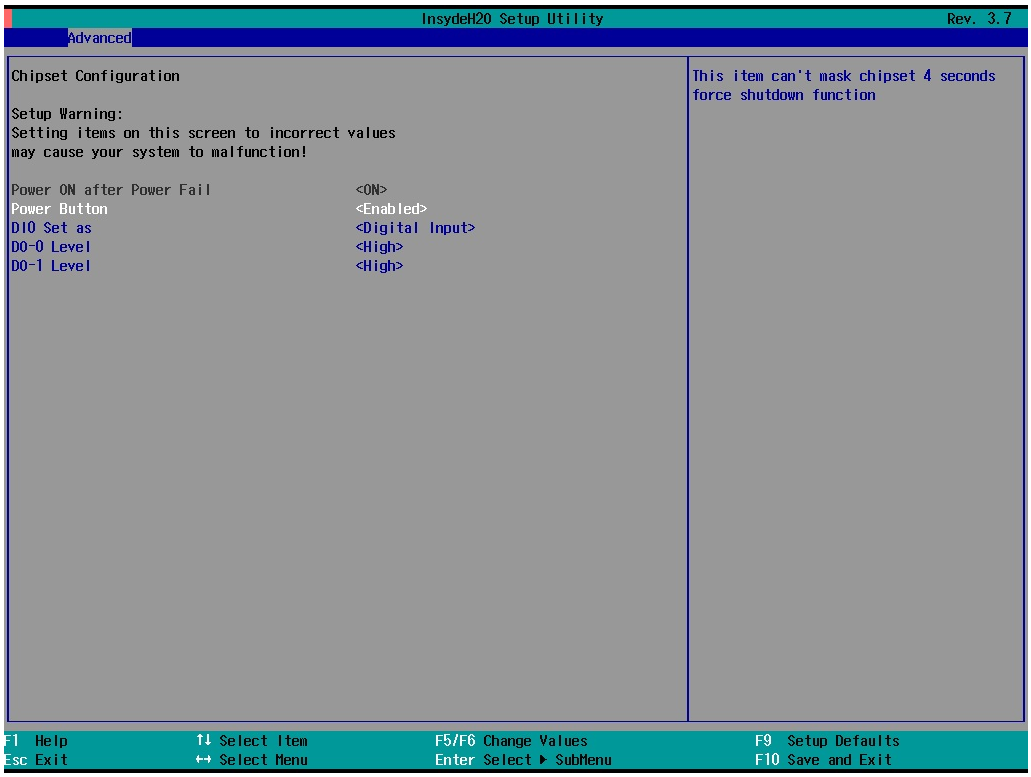
IGD—Boot Type

This item allows you to select the video device activated during POST.

Options: VBIOS Default (default), VGA, DVI

Chipset Configuration

This item allows you to configure the chipset settings.



Power ON after Power Fail

This item allows you to enable the computer form automatically powering up after a system crash.

Options: ON (default)

Power Button

This item allows you to enable/disable the power button. If you enable the power button function, press the power button to power on or power off the computer. If you disable the power button function, you need to press for more than four seconds to power off the computer.

Options: Enabled (default), Disabled

DI0 Set as

This item allows you to set the DI0 as Digital Input or Reset.

Options: Digital Input (default), Reset#

DO-0 Level

This item allows you set the DO-0 as high or low status.

Options: High (default), Low

DO-1 Level

This item allows you set the DO-1 as high or low status.

Options: High (default), Low.

PCI Express Configuration

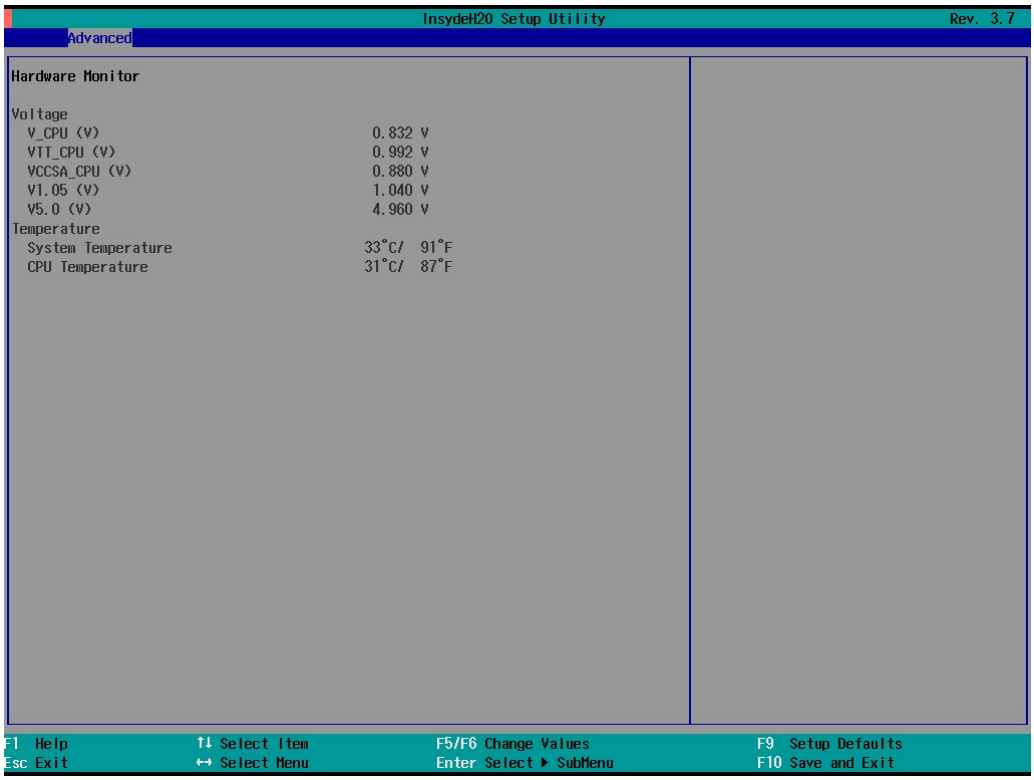
PCIe Speed

This item allows you to configure the speed of the mini PCIe interface.

Option: Auto (default), Gen1, Gen2

Hardware Monitor

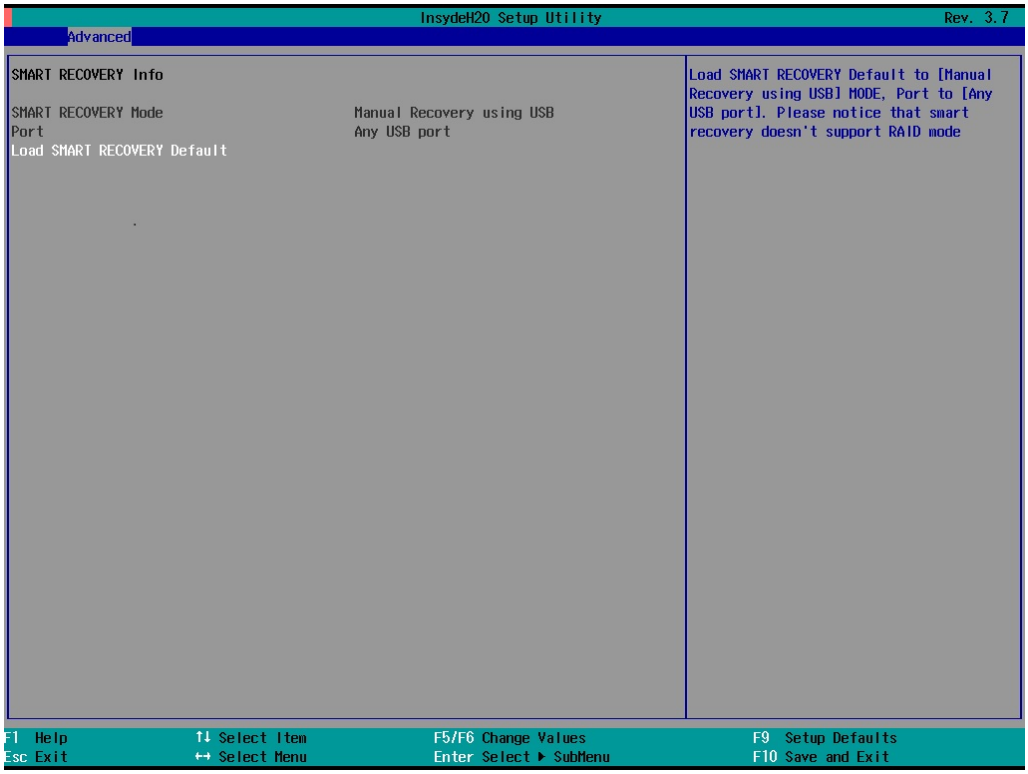
This item allows you to view stats like CPU and system temperature, voltage levels.



Note that the voltage values will vary depending on the different models, and there will be 5% tolerance for the temperature values. However, this function works only when the ambient temperature is above 0°C.

Smart Recovery Info

This items allows you to view the Smart Recovery information.


InsydeH20 Setup Utility
Rev. 3.7
Advanced
SMART RECOVERY Info
SMART RECOVERY Mode
Manual Recovery using USB
Port
Any USB port
Load SMART RECOVERY Default
Load SMART RECOVERY Default to [Manual Recovery using USB] MODE, Port to [Any USB port]. Please notice that smart recovery doesn't support RAID mode
F1 Help
↑↓ Select Item
F5/F6 Change Values
F9 Setup Defaults
Esc Exit
↔ Select Menu
Enter Select ▶ SubMenu
F10 Save and Exit

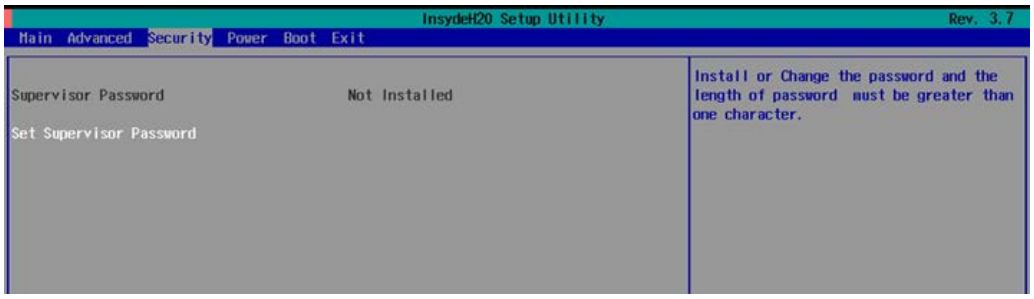
Load Smart Recovery Default

This item allows you to load Smart Recovery default value. Refer to the Smart Recovery Website: http://www.moxa.com/product/Smart-Recovery.htm

Options: Yes (default), No

Security Settings

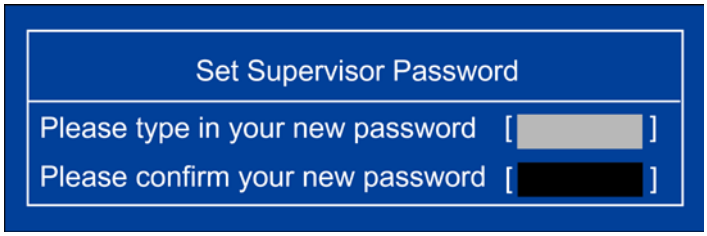
This section allows users to configure security settings with a supervisor password.


InsydeH20 Setup Utility
Rev. 3.7
Main Advanced Security Power Boot Exit
Supervisor Password
Not Installed
Set Supervisor Password
Install or Change the password and the length of password must be greater than one character.

Set Supervisor Password

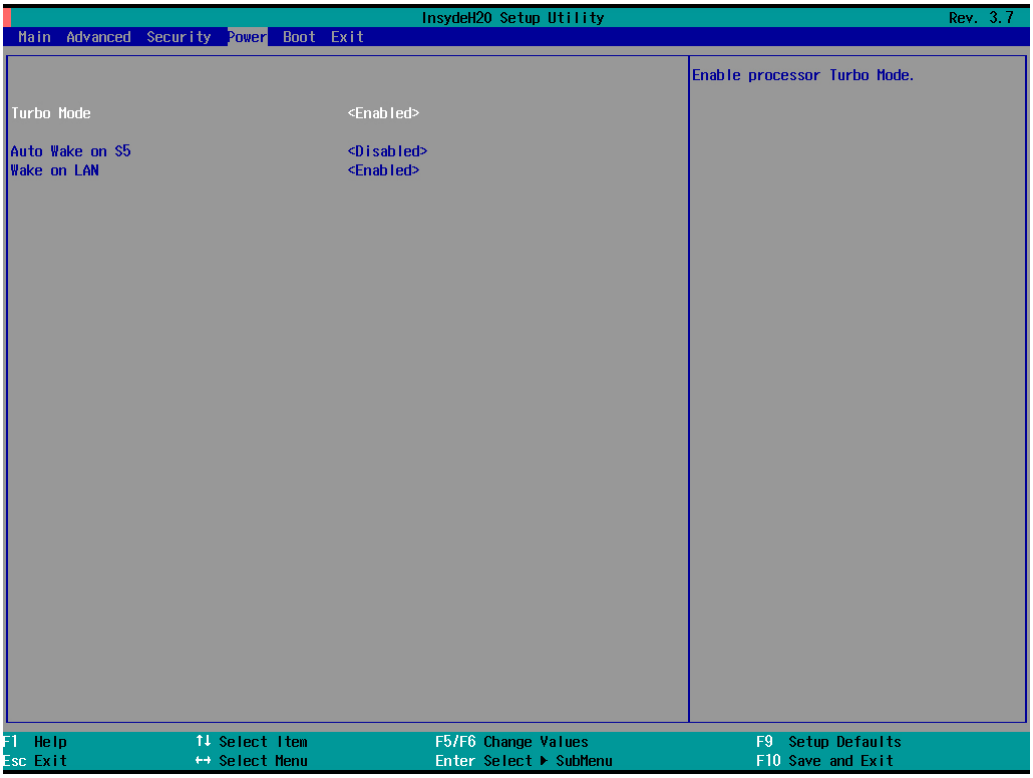
This item allows you set the supervisor password. Select and then enter the password, and then confirm the password again.

To delete the password, enter **Set Supervisor Password** and then enter the old password; then, leave the new password fields blank, and press enter.



Power Settings

The section allows users to configure power settings.



Turbo Mode

This item allows users to determine whether to enable the Intel CPU Turbo Boost technology.

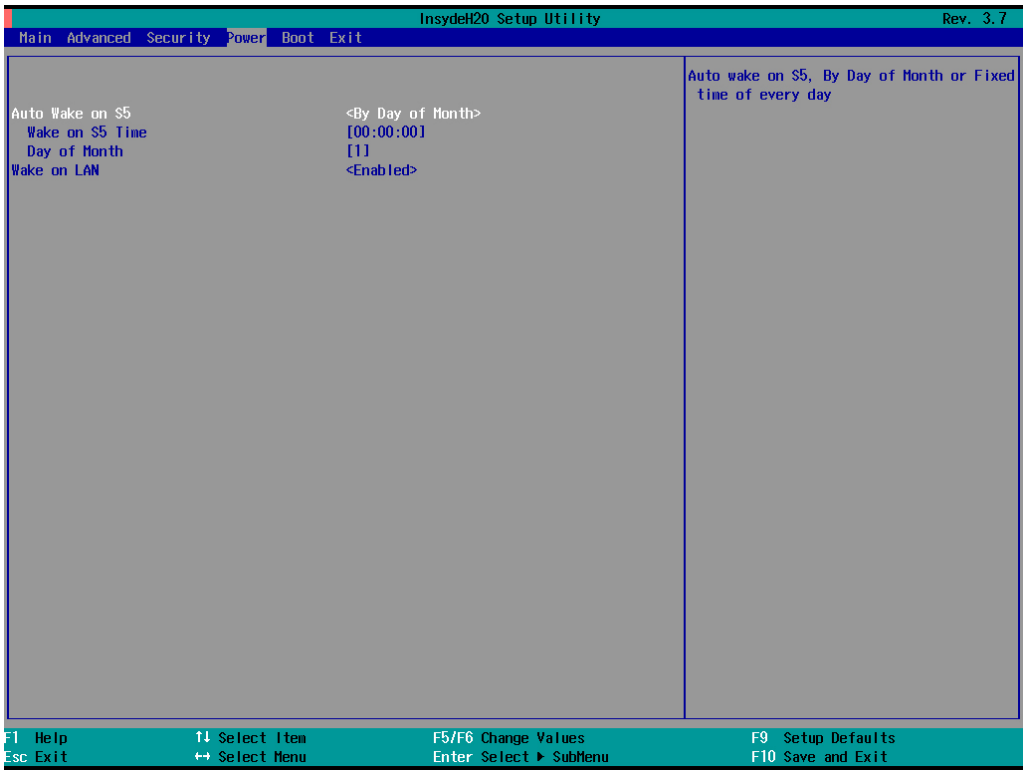
Options: Enabled (default), Disabled.

Auto Wake on S5

This item allows you to configure the computer to wake from S5 status. S5 stands for Soft Off, where the PSU remains engaged but power to all other parts of the system is cut. Auto-wake on S5 schedules a soft-reboot at certain periodic times that may be specified in the BIOS.

Options: Disabled (default); By Every Day (user specifies a regular daily time when the computer will power up); By Day of Month (user specified a regular day each month when the computer will power up)

InsydeH20 Setup Utility
Rev. 3.7
Main Advanced Security Power Boot Exit
Auto wake on S5, By Day of Month or Fixed time of every day
Turbo Mode <Enabled>
Auto Wake on S5 <By Every Day>
Wake on S5 Time [00:00:00]
Wake on LAN <Enabled>
F1 Help ↑↓ Select Item F5/F6 Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ SubMenu F10 Save and Exit


InsydeH20 Setup Utility
Rev. 3.7
Main Advanced Security Power Boot Exit
Auto wake on S5, By Day of Month or Fixed time of every day
Auto Wake on S5 <By Day of Month>
Wake on S5 Time [00:00:00]
Day of Month [1]
Wake on LAN <Enabled>
F1 Help ↑↓ Select Item F5/F6 Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ SubMenu F10 Save and Exit

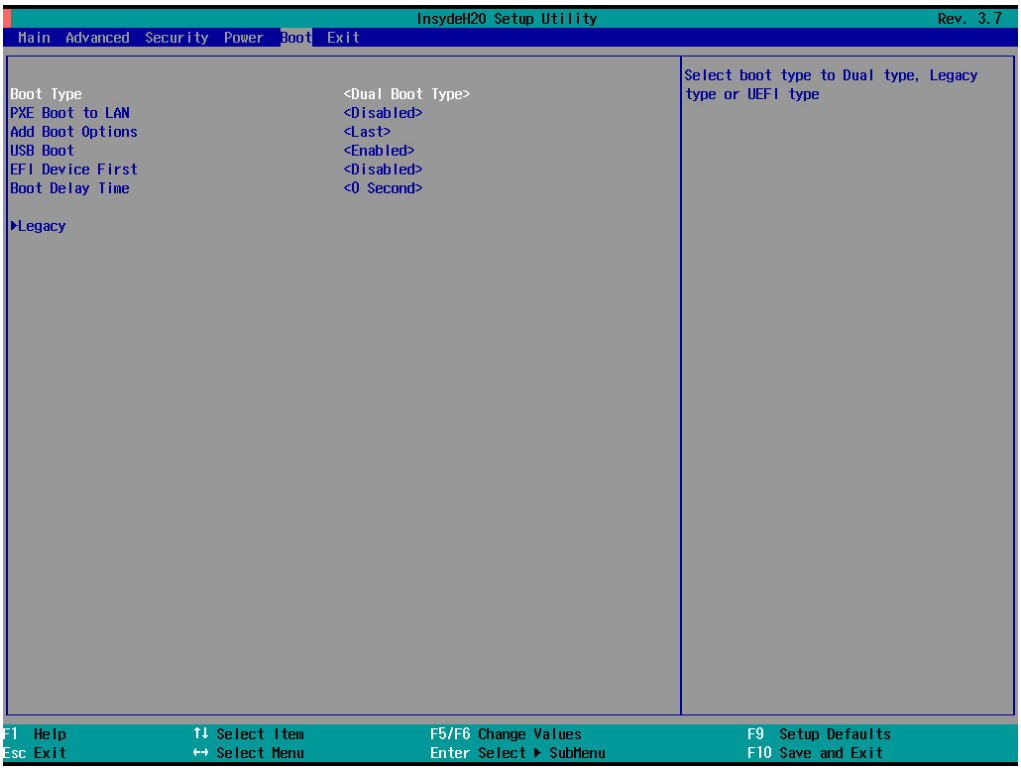
Wake on LAN

This feature is used to wake on the system by a LAN device from a remote host.

Options: Enabled (default), Disabled.

Boot Settings

The section allows users to configure boot settings.



Boot Type

This item allows you to enable/disable quick boot function.

Options: Dual Boot Type (default), Legacy Boot Type, UEFI Boot Type.

PXE Boot to LAN

This item allows you to enable/disable PXE boot to LAN function.

Options: Disabled (default), Enabled

Add Boot Options

This item allows you to add the boot order options for the new boot devices on and the removable devices, such as USB disk.

Options: Last (default), First

USB Boot

This item allows you to enable/disable USB boot function..

Options: Enabled (default), Disabled

EFI Device First

This item allows you to determine EFI device first or legacy device first. If enabled, EFI device will be the first; if disabled, legacy device will be the first.

Options: Disabled (default), Enabled

Boot Delay Time

This item allows you to configure the delay time value for users to input hot key during POST time.

Options: 0 Second (default), 3 Seconds, 5 Seconds, 10 Seconds

Legacy

Normal Boot Menu

This item allows you to configure the boot menu.

Options: Normal (default), Advance

Boot Type Order

This item allows you to select the boot order. Use -/F5 (move down) or +/F6 (move up) to change values.

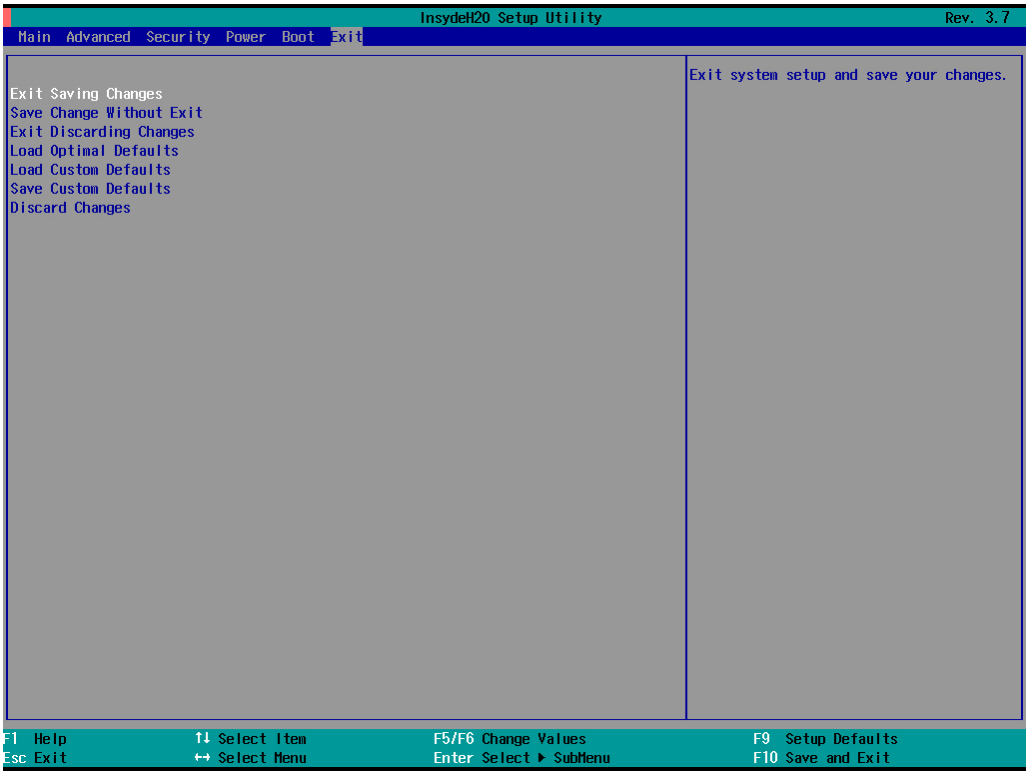
Options: Hard Disk Drive (default), CD/DVD-ROM Drive, USB, Others

Hard Disk Drive/USB Drive

This item allows you to view installed devices such as hard disk drives, USB drives, or CD-ROMs. For example, if you have inserted a USB drive into the computer, it will appear here. You can view and select boot order in the same type storage.

Exit Settings

The section allows users to exit the BIOS environment.



Exit Saving Changes

This item allows you to exit the BIOS environment and save the values you have just configured.

Options: Yes (default), No

Save Change Without Exit

This item allows you to save changes without exiting the BIOS environment.

Options: Yes (default), No

Exit Discarding Changes

This item allows you to exit without saving any changes that might have been made to the BIOS.

Options: Yes (default), No

Load Optimal Defaults

This item allows you to revert to the factory default BIOS values.

Options: Yes (default), No

Load Custom Defaults

This item allows you to load custom default values for the BIOS settings.

Options: Yes (default), No

Save Custom Defaults

This item allows you to save the current BIOS values as a “custom default” that may be reverted to at any time by the “load custom defaults” selection just above.

Options: Yes (default), No

Discard Changes

This item allows you to discard all settings you have just configured.

Options: Yes (default), No

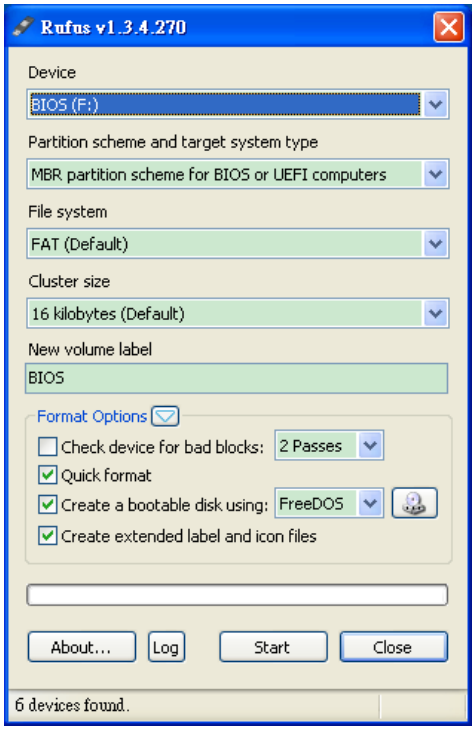
Upgrading the BIOS

This section describes how to upgrade the BIOS. However, Note that it is easy to permanently damage the computer when upgrading the BIOS. We strongly recommend that you contact Moxa’s technical support staff for assistance in order to obtain all necessary tools and the most current advice before attempting to upgrade the BIOS on any Moxa device.

Step 1: Create a Bootable USB Disk

Before upgrading the BIOS every user should first create a bootable USB RAM drive as a system rescue device. A useful software suite for building USB RAM drives may be found by searching for Rufus, which may then be downloaded and used to create a bootable RAM drive. Do the following steps to create a bootable USB disk by using Rufus.

1. Start the Rufus and in Device drop-down list select the USB device that you want to use as a bootable disk.
2. Select **MBR partition scheme for BIOS or UEFI computers**, let it can boot from legacy BIOS or UEFI.
3. Select **FAT (Default)** from File system drop-down list.
4. Select **16 kilobytes (Default)** for Cluster size.
5. Enter a drive name in New volume label.
6. Check **Quick format**, **Create a bootable disk using FreeDOS**, and **Create extended label and icon files**.
7. Click **Start** to format and create the bootable USB drive.



ATTENTION

When you use the USB with the capacity larger than 4 GB, you need to convert the file system type as FAT32.

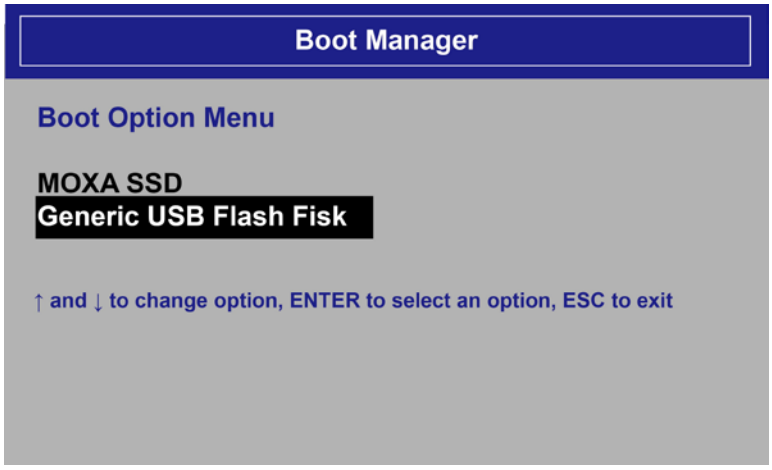
Step 2: Prepare the Upgrade File

You must use the BIOS upgrade installation file to upgrade the BIOS. Contact Moxa's technical department for assistance.

1. Get the BIOS upgrade installation file. The file name should have following format: **V2616AxxSx.exe** (xx refers to version numbers).
2. Copy the file to the Bootable USB Disk.

Step 3: Run the upgrade program on the V2616A Computer

1. Reboot the computer, press F2 while booting up to go to the Boot Manager
2. Select USB Disk as the first boot source. Press Enter to continue.



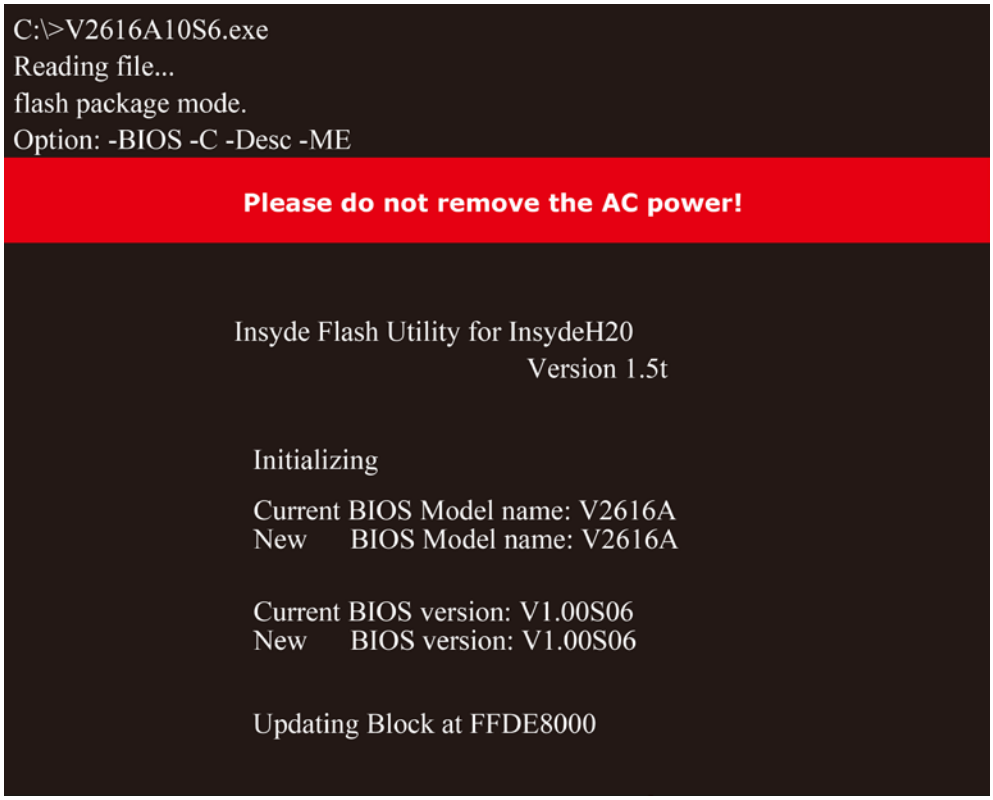
3. When boot up finishes, DOS screen will show up. Go to the directory where the upgrade file is located. For example, if the upgrade file is stored in the V2616A folder, type cd V2616A.

```
C:\cd V2616A
```

4. Run the upgrade program by typing **2616A10S6.exe**. Note that the upgrade filename may vary depending on the versions.

```
C:\ V2616A>2616A10S6.exe
```

5. The upgrade program will be automatically performed. Wait until the procedure to be finished.



6. When the upgrade is finished, the computer will automatically reboot. You may check the BIOS version in Main page of the BIOS Setup

ATTENTION

Do NOT switch off the power supply during the BIOS upgrade, since doing so may cause the system to crash.

A

Regulatory Approval Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Class A: FCC Warning! This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

European Community

Warning:
This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.